

# **CURRICULUM VITAE**

Assoc. Prof. Habib Senol, *IEEE* Senior Member

## **CONTACT INFORMATION**

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Cibali Kampusu  
34083  
Fatih/Istanbul TURKEY

## **RESEARCH INTEREST**

Statistical signal processing techniques and their applications to wireless electrical/ underwater acoustic/optical communication systems, estimation and equalization algorithms for wireless communications, OFDM and OFDM inspired waveforms, multi-carrier communications for 5G and beyond wireless networks, and statistical machine learning for communications.

## **EDUCATION**

Ph.D. Electronics Engineering, Graduate School of Science and Engineering, Isik University, Istanbul/Turkey	2002-2006
M.Sc. Electronics Engineering, Graduate School of Science and Engineering, Istanbul University, Istanbul/Turkey	1995-1999
B.Sc. Electronics Engineering, School of Engineering, Istanbul University, Istanbul/Turkey	1989-1993

## **ACADEMIC EMPLOYMENT HISTORY**

2018 - 2019	Visiting Professor, Department of Electrical Engineering, Arizona State University, USA.
2017– present	Assoc. Prof, Department of Computer Engineering, School of Engineering, Kadir Has University, Turkey.
2011 – 2017	Asst. Prof, Department of Computer Engineering, School of Engineering, Kadir Has University, Turkey.
2007 - 2008	Post-Doc Researcher, Research on Channel Estimation and Detection Algorithms for Sensor Networks, Department of Electrical Engineering, Arizona State University, USA.
2006 – 2011	Senior Lecturer (Dr.), Department of Computer Engineering, School of Engineering, Kadir Has University, Turkey.
2000 – 2006	Lecturer, Department of Computer Engineering, School of Engineering, Kadir Has University, Turkey.
1996 - 1998	Research Assistant, Department of Electronics Engineering, School of Engineering, Istanbul University, Turkey.

## PUBLICATIONS

### JOURNAL PUBLICATIONS

1. Mehmet Basaran, Habib Senol, Serhat Erkucuk, and Hakan A. Cirpan, “**Channel Estimation for TDS-OFDM Systems in Rapidly Time-Varying Wireless Channels**”, *IEEE Transactions on Wireless Communications*, vol. 17, no.12, December 2018, pp. 8123 – 8135.
2. Xiaofeng Li, Cihan Tepedelenlioglu, and Habib Senol, “**Optimal Training for Residual Self-Interference for Full Duplex One-way Relays**”, *IEEE Transactions on Communications*, vol. 66, no.12, December 2018, pp. 5976 – 5989.
3. Habib Senol, Xiaofeng Li, and Cihan Tepedelenlioglu, “**Rapidly Time-Varying Channel Estimation for Full Duplex Amplify-and-Forward One-Way Relay Networks**”, *IEEE Transactions on Signal Processing*, vol. 66, no.11, June 2018, pp. 3056 – 3069.
4. Atilla Özmen and Habib Senol, “**Channel Estimation for Realistic Indoor Optical Wireless Communication in ACO-OFDM Systems**”, *Wireless Personal Communications*, vol. 102, no.1, September 2018, pp. 247 – 259.
5. Xiaofeng Li, Cihan Tepedelenlioglu, Habib Senol, “**Channel Estimation for Residual Self-Interference in Full Duplex Amplify-and-Forward Two-way Relays**”, *IEEE Transactions on Wireless Communications*, vol. 16, no.8, August 2017, pp. 4970 – 4983.
6. Hakan Metin Ozer, Atilla Ozmen, and Habib Senol, “**Bayesian estimation of discrete-time cellular neural network coefficients**”, *Turkish Journal of Electrical Engineering and Computer Sciences*, vol. 25, no.3, May 2017, pp. 2363 – 2374.
7. Erdal Panayirci, Habib Senol, Murat Uysal, and H. Vincent Poor, “**Sparse Channel Estimation and Equalization for OFDM-Based Underwater Cooperative Systems with Amplify-and-Forward Relaying**”, *IEEE Transactions on Signal Processing*, vol. 64, no.1, January 2016, pp. 214-228.
8. Xiaofeng Li, Cihan Tepedelenlioglu, and Habib Senol, “**Optimal Power Allocation between Training and Data for MIMO Two-way Relay Channels**”, *IEEE Comm. Letters*, vol. 19, issue 11, November 2015, p. 1941–1944.
9. Habib Senol, “**Joint Channel Estimation and Symbol Detection for OFDM Systems in Rapidly Time-Varying Sparse Multipath Channels**”, *Wireless Personal Communications*, vol. 82, issue 3, June 2015, p. 1161–1178.
10. Hatef Nouri, Murat Uysal, Erdal Panayirci, and Habib Senol, “**Information Theoretical Performance Limits of Single-Carrier Underwater Acoustic Systems**”, *IET Communications*, vol. 8, issue 15, October 16, 2014, p. 2599–2610.
11. Habib Senol, Erdal Panayirci, and H. Vincent Poor, “**Non-Data-Aided Joint Channel Estimation and Equalization for OFDM Systems in Very Rapidly Varying Mobile Channels**”, *IEEE Transactions on Signal Processing*, vol. 60, no.8, August 2012, pp. 4236-4253.
12. Erdal Panayirci, Habib Senol, and H. Vincent Poor, “**Joint Channel Estimation, Equalization and Data Detection for OFDM Systems in the Presence of Very High Mobility**”, *IEEE Transactions on Signal Processing*, vol. 58, no.8, August 2010, pp. 4225-4238.

13. Kai Bai, Habib Senol, and Cihan Tepedelenlioglu, “**Outage Scaling Laws and Diversity for Distributed Estimation over Parallel Fading Channels**”, *IEEE Transactions on Signal Processing*, vol. 57, no.8, August 2009, pp. 3182-3192.
14. Habib Senol and Cihan Tepedelenlioglu, “**Performance of Distributed Estimation over Unknown Parallel Fading Channels**”, *IEEE Transactions on Signal Processing*, vol. 56, no.12, December 2008, pp. 6057-6068.
15. Habib Senol, Hakan A. Cirpan, Erdal Panayirci, and Mesut Cevik, “**A Low Complexity Time-Domain MMSE Channel Estimator for Space-Time/Frequency Block Coded OFDM Systems**”, *EURASIP Journal on Applied Signal Processing, Special Issue on Reliable Communications over Rapidly Time-Varying Channels*, vol. 2006, no.19, Article ID 39026, doi:10.1155/ASP/2006/39026, pp. 1-14, 2006. (Journal title changed to *Eurasip Journal on Advances in Signal Processing* in August 2007).
16. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**Linear Expansions for Frequency Selective Channels in OFDM Systems**”, *AEUE International Journal of Electronics and Communications*, vol. 60, no. 3, 2006, pp. 224-234.
17. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**A Low Complexity KL-Expansion Based Channel Estimator for OFDM Systems**”, *EURASIP Journal on Wireless Communications and Networking*, vol. 2005, no.2, 2005, pp. 163-174.

#### CONFERENCE PUBLICATIONS

1. Ayse Betul Buyuksar, Habib Senol, Serhat Erkucuk, and Hakan A. Cirpan, “**Rapidly Varying Sparse Channel Tracking with Hybrid Kalman-OMP Algorithm**”, *International Telecommunications Conference (ITELCON 2017)*, December 28-29, 2017, Istanbul, Turkey.
2. Ayse Betul Buyuksar, Habib Senol, Serhat Erkucuk, and Hakan A. Cirpan, “**Data-Aided Autoregressive Sparse Channel Tracking for OFDM Systems**”, *Thirteenth International Symposium on Wireless Communication Systems (ISWCS'16)*, September 20-23, 2016, Poznan, Poland.
3. Habib Senol, and Atilla Ozmen, “**Channel Estimation and Data Detection for Visible Light ACO-OFDM Systems**”, *European Conference on Networks and Communications (EuCNC-2016)*, June 27-30, 2016, Athens, Greece.
4. Mehmet Basaran, Serhat Erkucuk, Habib Senol, and Hakan A. Cirpan, “**Effect of Inter-Block-Interference-free Region on Compressed Sensing Based Channel Estimation in TDS-OFDM Systems**”, *IEEE 4th International Blacksea Conference on Communications and Networking (BlackSeaCom'16)*, June 6-9, 2016, Varna, Bulgaria.
5. Mustafa Can Macit, Habib Senol, and Serhat Erkucuk, “**Performance Investigation of IEEE 802.11af Systems Under Realistic Channel Conditions**”, *11th International Wireless Communication and Mobile Computing Conference (IWCMC-2015)*, August 24-28, 2015, Dubrovnik, Croatia.
6. Anil Yesilkaya, Huseyin Fuat Alsan, Farshad Miramirkhani, Erdal Panayirci, Habib Senol, and Murat Uysal, “**Performance Analysis of DCO-OFDM Systems in the Presence of Realistic Indoor Visible Light Channels**”, *European Conference on Networks and Communications (EuCNC-2015)*, June 29-July 2, 2015, Paris, France.
7. Habib Senol, Erdal Panayirci, and Murat Uysal, “**Sparse Channel Estimation for OFDM based Underwater Acoustic Cooperative Systems with Amplify-and-Forward Relaying**”, *IEEE Second*

*International Blacksea Conference on Communications and Networking (BlackSeaCom'14)*, May 27-30, 2014, Chisinau, Moldova. (Invited Paper)

8. Habib Senol, Erdal Panayirci, Mustafa Erdogan, and Murat Uysal, “**Channel Estimation in Underwater Cooperative OFDM System with Amplify - and - Forward Relaying**”, *IEEE Global Telecommunications Conference (GLOBECOM'12)*, December 3-7, 2012, Anaheim, CA, USA.
9. Habib Senol, Erdal Panayirci, and H. Vincent Poor, “**Joint Channel Estimation and Equalization for Downlink OFDMA Systems in Very Rapidly Varying Mobile Channels**”, *JNCW 2011, NEWCOM++/COST2100 Joint Workshop on Wireless Communications*, March 1 -2 2011, Paris, FRANCE.
10. Habib Senol, Erdal Panayirci, and H. Vincent Poor, “**Joint Channel Estimation and Equalization for OFDM based Broadband Communications in Rapidly Varying Mobile Channels**”, *IEEE GLOBECOM 2010 Workshop on Broadband Wireless Access*, December 6 -10 2010, Miami, FL, USA.
11. Habib Senol, Erdal Panayirci, H. Vincent Poor, Onur Oguz, and Luc Vandendorpe, “**Semiblind Joint Channel Estimation and Equalization for OFDM Systems in Rapidly Varying Channels**”, *The 19th European Commission Annual Conference, Future Network and Mobile Summit 2010*, June 16 -18 2010, Florence, ITALY.
12. Erdal Panayirci, Habib Senol, and H. Vincent Poor, “**Joint Data Detection and Channel Estimation for OFDM Systems in the Presence of Very High Mobility**”, *20th IEEE International Symposium On Personal, Indoor and Mobile Radio Communications (PIMRC'09)*, September 13 -16 2009, Tokyo, JAPAN.
13. Habib Senol, Cihan Tepedelenlioglu, and Kai Bai, “**Scaling Laws for Distributed Estimation over Orthogonal Fading Channels**”, *10<sup>th</sup> IEEE International Workshop on Signal Processing Advances for Wireless Communications (SPAWC'09)*, June 21 -24 2009, Perugia, ITALY.
14. Cihan Tepedelenlioglu, Habib Senol, and Kai Bai, “**Outage Diversity for Distributed Estimation over Parallel Fading Channels**”, *IEEE 42<sup>nd</sup> Asilomar Conference On Signals, Systems, and Computers (ACSSC'08)*, October 26 -29 2008, Pacific Grove, CA, USA.
15. Habib Senol and Cihan Tepedelenlioglu, “**Distributed Estimation over Parallel Fading Channels with Channel Estimation Errors**”, *IEEE International Conference on Acoustic, Speech and Signal Processing (ICASSP'08)*, March 30 – April 4 2008, Las Vegas, NV, USA.
16. Habib Senol and Cihan Tepedelenlioglu, “**Distributed Estimation with Channel Estimation Error over Orthogonal Fading Channels**”, *IEEE 41<sup>st</sup> Asilomar Conference on Signals, Systems, and Computers (ACSSC'07)*, November 4 -7 2007, Pacific Grove, CA, USA.
17. Habib Senol, Hakan A. Cirpan, Erdal Panayirci, and Mesut Cevik, “**Low-Complexity MMSE Channel Estimator for Space Time Coded OFDM Systems with Transmit Diversity**”, *4<sup>th</sup> International Conference on Electrical and Electronics Engineering (ELECO'05)*, December 7-11 2005, Bursa, TURKEY.
18. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**Frequency Selective Fading Channel Estimation in OFDM Systems using KL Expansion**”, *13<sup>rd</sup> European Signal Processing Conference (EUSIPCO'05)*, September 4-8 2005, Antalya, TURKEY.
19. Habib Senol, Hakan A. Cirpan, Erdal Panayirci, and Mesut Cevik, “**KL-Expansion Based MMSE Channel Estimator for Space-Time/Frequency Block Coded OFDM Systems**”, *2<sup>nd</sup> COST 289 Workshop (Special Topics on 4G Systems)*, July 6-7 2005, Antalya, TURKEY.

20. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**Pilot Aided Bayesian MMSE Channel Estimation for OFDM Systems: Algorithm and Performance Analysis**”, *IEEE Global Telecommunications Conference (GLOBECOM'04)*, November 29 - December 3, 2004, Dallas, TX, USA.
21. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**Adaptive MMSE channel estimation in OFDM systems**”, *3<sup>rd</sup> International Conference on Electrical and Electronics Engineering (ELECO 2003)*, December 3-7, 2003, Bursa, TURKEY.
22. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**MMSE Estimation Approach for Karhunen-Loeve Expansion Coefficients of Multipath Channel in OFDM**”, *6<sup>th</sup> Baiona Workshop on Signal Processing in Communications*, September 8-10 2003, Baiona, SPAIN.

#### LOCAL CONFERENCE PUBLICATIONS

1. Anil Yesilkaya, Huseyin Fuat Alsan, Farshad Miramirkhani, Erdal Panayirci, Habib Senol and Murat Uysal “**Modeling of visible light channels and performance analysis of ACO-OFDM**”, *IEEE 23rd Signal Processing and Communications Applications Conference (SIU 2015)*, May 16-19, Malatya, Turkey.
2. Mustafa Erdogan, Habib Senol, Erdal Panayirci and Murat Uysal “**MP-SAGE Based Channel Estimation for Underwater Cooperative OFDM Systems**”, *IEEE 21th Signal Processing and Communications Applications Conference (SIU 2013)*, April 24-26, Haspolat, Turkey.
3. Mustafa Erdogan, Habib Senol, Erdal Panayirci and Murat Uysal “**Sparse underwater acoustic channel estimation in colored gaussian noise**”, *IEEE 20th Signal Processing and Communications Applications Conference (SIU 2012)*, April 18-20, Mugla, Turkey.
4. Murat Uysal, Erdal Panayirci, and Habib Senol, “**Cooperative Diversity Techniques for Next Generation Underwater Acoustic Communication Systems**”, *ASELSAN (Company of Turkish Armed Forces Foundation) Communications and Information Technologies Workshop*, October 13-14, 2011, Ankara, Turkey.
5. Burç. A Kaleli, Habib Senol, and Erdal Panayirci, “**Joint Phase Noise Estimation and Source Detection**”, *IEEE 18th Signal Processing and Communications Applications Conference (SIU 2010)*, April 22-24, Diyarbakir, Turkey.
6. Erdal Panayirci, Habib Senol, and H. Vincent Poor, “**Joint Channel Estimation and Symbol Detection for High Mobile OFDM**”, *3rd Symposium on Communication Technologies and Applications (HABTEKUS 2009)*, December 9-11, Istanbul, Turkey.
7. Habib Senol and Cihan Tepedelenlioglu, “**Effect of the Channel Estimation Error on the Performance of the Source Estimator in a Wireless Sensor Network with Orthogonal Channels**”, *IEEE 16th Signal Processing and Communications Applications Conference (SIU 2008)*, April 20-22, Aydin, Turkey.
8. Habib Senol, Hakan A. Cirpan, and Erdal Panayirci, “**Minimum Mean Squared Error Estimator for OFDM Systems**”, *IEEE 11st Signal Processing and Communications Applications Conference (SIU 2003)*, June 18-20, Istanbul, Turkey.

## TEACHING

- Microprocessors (Fall)
- Computer Programming-1 (Fall & Spring)
- Formal Languages and Automata Theory (Spring)
- Machine Learning (Spring) (**Graduate Course**)
- Linear Systems (Fall) (**Graduate Course**)

## THESIS ADVISOR

1. Co-advisor of Ayse Betul Buyuksar, Thesis: **Sparse channel estimation for time-varying OFDM systems**, Istanbul Technical (Advisor was Prof. Hakan Ali Cirpan and another co-advisor was Assoc. Prof. Serhat Erkucuk), June 2017.  
(Ms. Buyuksar enrolled in the Ph.D. degree program at the Department of Telecommunications Engineering at Istanbul Technical University).
2. Advisor of Abdur Rehman Bin Tahir, Thesis: **Artificial neural network based sparse channel estimation for OFDM systems**, Kadir Has University (Co-advisor was Assoc. Prof. Atilla Ozmen), January 2017.
3. Co-advisor of Mustafa Can Macit, Thesis: **Performance of Wi-Fi in TV White Space**, Kadir Has University (Advisor was Assoc. Prof. Serhat Erkucuk), June 2016.  
(Mr. Macit enrolled in the Ph.D. degree program at the Department of Electrical-Electronics Engineering at Bogazici University).

## PROJECTS

- (Principle Investigator) Kadir Has University Scientific Research Project, “**Prototype Implementation of Visible Light Communication System and Experimental Performance Analysis**”, 2014-2015.
- (Principle Investigator) Kadir Has University Scientific Research Project, “**Design and Analysis of Cooperative Diversity Systems for Underwater Acoustic Communications**”, 2011-2012.
- (Researcher) Scientific and Technological Research Council of Turkey (TÜBİTAK) Project, “**Design of Underwater Acoustic Communication Systems**”, 2010-2013, Project No. 110E092.
- (Researcher) Europe 7th Framework Programme (FP7) Project, “**WIMAGIC: Worldwide Interoperability Microwave Broadband Access System for Next Generation Wireless Communications**”, 2008-2010.
- (Researcher) Europe 6th Framework Programme (FP6) Project, “**NEWCOM: Network of Excellence in Wireless Communications**”, 2004-2007.

## GRANTS

- **Research Grant, 2018**  
Title: Parameter Estimation for 5G Full Duplex Communication Systems  
Funded by: Scientific and Technological Research Council of Turkey (TÜBİTAK), BİDEB-2219  
Budget: 22,500 USD

- **Post-Doc Research Grant, 2007**

Title: Channel Estimation and Detection Algorithms for Sensor Networks

Funded by: Scientific and Technological Research Council of Turkey (TÜBİTAK), BİDEB-2219

Budget: 13,600 USD

## **HONOR AND AWARDS**

- Associate Professorship, Inter-University Council (UAK), April 2017.
- Advisor of Second Best Project Award, Project Title: “**Smart Food for Pets**”, 2018  
Undergraduate Engineering Design Graduation Project, Kadir Has University, Istanbul, Turkey
- Advisor of Third Best Project Award, Project Title: “**Liquid Tander**”, 2018  
Undergraduate Engineering Design Graduation Project, Kadir Has University, Istanbul, Turkey.
- Advisor of Second Best Project Award, Project Title: “**Laser Microphone**”, 2018  
Undergraduate Engineering Design Graduation Project, Kadir Has University, Istanbul, Turkey
- Kadir Has University Best Academician Award 2007

## **SERVICE**

1. Guest Editor for Turkish Journal of Electrical Engineering and Computer Sciences, 2017
2. Jury member for Master/Ph.D. Thesis or Qualifier Exam
  - Invited Jury Member for Master Thesis Defense of “Serhat Gul”, May 2018,  
**Advisor:** Prof. Hakan Ali Cirpan, Electronics and Communications Engineering Department, Istanbul Technical University, Istanbul, Turkey.
  - Invited Jury Member for Ph.D. Thesis Defense of “Mehmet Basaran”, February 2018,  
**Advisor:** Prof. Hakan Ali Cirpan, Electronics and Communications Engineering Department, Istanbul Technical University, Istanbul, Turkey
  - Invited Jury Member for Master Thesis Defense of “Ayse Betul Buyuksar”, May 2017,  
**Advisor:** Prof. Hakan Ali Cirpan, Electronics and Communications Engineering Department, Istanbul Technical University, Istanbul, Turkey.
  - Invited Jury Member for Ph.D. Qualifier Exam of “Hatef Nouri”, May 2017,  
**Advisor:** Prof. Murat Uysal, Department of Electrical and Electronics Engineering, Ozyegin University, Istanbul, Turkey.
  - Invited Jury Member for Ph.D. Qualifier Exam of “Mohammed Amessie”, May 2017,  
**Advisor:** Prof. Murat Uysal, Department of Electrical and Electronics Engineering, Ozyegin University, Istanbul, Turkey.
  - Invited Jury Member for Ph.D. Qualifier Exam of “Bayram Cevdet Akdeniz”, May 2015,  
**Advisor:** Assoc. Prof. Ali Emre Pusane, Electrical and Electronics Engineering Department, Bogazici University, Istanbul, Turkey.

3. Ph.D. Qualifier Examination Committee Member of the Department of Computer Engineering, Kadir Has University, Istanbul, Turkey, 2015-present
4. Member of the Technical Program Committee, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), 2009
5. Reviewer for (within last 10 years)
  - IEEE Transactions on Signal Processing
  - IEEE Transactions on Wireless Communications
  - IEEE Transactions on Communications
  - IEEE Journal on Selected Areas in Communications
  - IEEE Transactions on Vehicular Technology
  - IEEE Signal Processing Letters
  - IEEE Communications Letters
  - IEEE Wireless Communications Letters
  - EURASIP Journal on Wireless Communications and Networking
  - Wireless Communications and Mobile Computing
  - Physical Communication
  - Annales des Télécommunications
  - Digital Signal Processing
  - International Journal of Electronics and Communications
6. Member of Internship Evaluation Committee, School of Engineering, Kadir Has University, Istanbul/Turkey 2003 - present

### **COMPUTER SKILLS**

C, C++, Python (and WinPython), MATLAB, LaTeX Markup Language, ATMega328 Assembly Language, Arduino Uno IDE Language, PIC Micro 16F877 Assembly Language